

The future of water is digital, but the sector is not there yet

Climate change, increased global population, infrastructure problems, pollution – we live in a time where many factors affect the quantity and the quality of the water resources available. In such times, concepts for water resilience, ideas for a more sustainable approach as well as technological improvements for the water sector are paramount. WaterSolutions spoke with Enrique Cabrera Jr., IWA Vice-President and Professor at Universitat Politècnica de Valencia, about water resilience, which role digitalization plays in the process and if the sector is attracting enough professionals to make this change.

Mr. Cabrera, the issue of water value is largely discussed. Many think that, in countries where water is so cheap, it is hard to educate people to use it wisely. Do you think that raising prices is directly connected with raising awareness? Or are there other ways of raising the value of water which are not economically related?

Cost recovery is a fundamental part of sound water management, but I do not think that raising prices should be considered an educational tool. Access to water services is a human right, and I believe that these services should be provided at the minimum possible cost for the citizens. It is true, that in many places water tariffs are not high enough to cover costs and they should be raised. However, these tariff increases' need cannot prevent people from enjoying adequate water and sanitation services.

Having said that, I am always advocating for educational campaigns for the general public on the value of water and

water services. It is sad to see people willing to pay 1,000 times more for bottled water than for water safely delivered to their household, while those same people are reluctant to pay reasonable tariffs. I think we still have a long way ahead of us in educating the citizenship about water services and their real value.

Let's pretend that the "problem" with consumers is solved: they are now aware of their footprints and will use water (more) wisely. What motivates water utilities to do their best (i.e. by renewing infrastructure, investing money on new technology that will make processes more efficient, etc.) if they are in a business where monopoly prevails?

I believe that water as a natural monopoly requires some sort of regulatory framework, especially when the private sector is involved in the provision of the services. We can see many



Interviewee

Enrique Cabrera is a tenured full professor in fluid mechanics at the Universitat Politècnica de València (UPV). He has a bachelor's + master's degree in Industrial Engineering with specialization in Electricity, and a master's degree in efficient management and use of water. His doctorate focused on performance assessment and benchmarking of urban water services.

His activity, besides lecturing, revolves around urban hydraulics and urban water management. More specifically on topics related to performance assessment, benchmarking, regulation of water services, water and energy, infrastructure asset management and digital water.

In addition to his academic activity (lecturing and research), he is responsible for his university's online learning efforts on urban water, training thousands of water professionals in Spanish-speaking countries. His work also includes consultancy and advisory roles in national and international projects.

Enrique is a very active member of the International Water Association. He is currently the Vice President of IWA. He also chairs the Specialist Group on Benchmarking and Performance Assessment and is the co-author of the IWA Manuals of Best Practice on Performance Indicators for Water Supply Services and Benchmarking Water Services.

“Digital water solutions will be a key element in achieving true resilience in the future...”

examples around the world of services that are not managed sustainably and will have infrastructure problems in the future, or where the quality of service is not up to par.

This does not mean that utilities cannot do an excellent job without being regulated. However, the natural incentives to do so are really not there, and it is the task of the administration to create those incentives. The IWA Lisbon Charter¹ is a good document to understand how a regulatory framework should work.

Still on the topic of investing in infrastructure: the effects of climate change - added to drastic population growth in some areas - have been defying suppliers. Can you observe a trend on how they are dealing with these challenges? Is there a tendency to try to forecast some situations far in advance and prepare for them or do they deal with the problems as they come?

The adequate management of the infrastructures has been a key topic in the sector for a few years now. My perception is that some advanced utilities are really making strategic infrastructure decisions based on future scenarios (including, among others, climate change consequences). However, the appropriate management of infrastructures is still a challenge in medium and small utilities all around the world. In those places we often find that the management style is more corrective than preventive, and a more strategic dimension is needed.

As such challenges become common place, developing concepts and actions towards resilience has become top priority for many governments and decision makers. Is this goal achievable short-term?

We definitely have the tools and the knowledge. Digital water solutions will be a key element in achieving true resilience in the future. However, as we were discussing before, all these things come at a cost, and resilient services may be more expensive than services being operated only thinking about today and not tomorrow. Tariffs need to reflect these circum-

stances and we need citizens to understand and support these policies.

Is the notion of a resilient city also feasible for big metropolitan areas like New York or Tokyo?

I am sure it is. New York or Tokyo may not be in a bad position due to the resources that these big cities have. I would be more concerned about megacities in low and medium-income countries where the growth is even much quicker and their resources significantly smaller. In those cases, planning ahead becomes much more difficult because water professionals are never done catching-up with the present. In any case, it is not a matter of "if", but "how". We must achieve true sustainability for those systems in order to meet SDG6. Building capacity in those regions by training professionals to be able to cope with those incredible challenges is a big part of the issue.

We believe it is coherent to say that efficiency plays an important role towards becoming resilient - in all public sectors, not only in the water sector - as well as towards solving many of the current water challenges. In your opinion, is digitalization directly connected with improved efficiency?

I would say that resilience is impossible to achieve in the water sector without efficiency. We have been discussing about resources and we know that they are not abundant in water services. Making the best possible use we can of the few available resources is fundamental to be able to cope with future challenges.

Digitalization will be an important piece of this puzzle. It will not bring magical solutions but some of the digital tools are truly impressive and they allow to develop solid management ideas in a way that was not possible before. We still need truly capable water professionals involved in the business and focused on improving efficiency, but digital tools will certainly lead to higher efficiency gains.

Do you think that the water sector is really becoming digital (i.e. processes being connected) or so far all that has happened is the development of products that give the impression that the sector is becoming more digital?

I believe that some early adopters have taken a giant leap towards more digital water services, but the sector is not there yet. Changes are taking place very quickly and I believe that in a few years a noticeable transformation towards everything digital will be noticeable in a significant portion of water services, especially in the larger cities.

¹ The Lisbon Charter is an international framework of good practice for public policy and regulation in drinking water supply, sanitation and wastewater management services. It contains clear reference to the rights and responsibilities of the various stakeholders and users. It offers a vision and a practical platform for reforming water management for sustainable development. Through five key principles for public policy and regulation on water and wastewater services, the Charter provides a framework for transforming water regulation that can be universally applied. The document is available under <https://iwa-network.org/publications/the-lisbon-charter/>

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However, I also think that we must encourage a meaningful transition and not just engage in change for the sake of changing. The evolution towards digital solutions must be the result of the clear strategic thinking we were discussing before. The adoption of digital solutions will be the logical conclusion of a journey towards sustainability, resilience and efficiency.

The International Water Association is organizing the first IWA Digital Water Summit, which will take place from November 30 to December 3, 2020 in Bilbao, Spain. What motivated the creation of the event and what are its goals?

Following on the previous question, we want to bring together everyone in the water sector to discuss the different options and success stories that digital solutions are bringing to the table. We wanted to create an event that would be useful not only to the early adopters and digital “converts” but also to those who are still considering whether they should start their digital journey and want to learn more about it.

IWA is the greatest global association in the sector. It provides a common space where utilities, solution providers, scientists and water professionals can get together, discuss and create traction on the water sector. The IWA Digital Water Summit is the association’s response to the sector’s need of guidance about these new solutions, how they can be implemented, what real benefits are they bringing and how are they aligned with the solid technical criteria that have always been present at every IWA event.

One of the proposals of the event is to promote an engagement that goes beyond the water sector to maximize the potential of digital tools. What are these sectors and how can the water sector learn from them and vice-versa?

The water sector will never move as quickly as other sectors. That is its nature. Utilities have been providing water for over 150 years and I am sure they will still be there 150 years from now. However, I have been working in benchmarking for decades and I am a believer in the value of learning from those who are best in class, regardless whether they are in other sectors. I am sure that we can learn a lot from the communications and energy sectors and adapt some of the digital solutions that have been developed there to the needs of water.

As a matter of fact, some water utilities are already partnering up with leaders in those sectors to think outside the box and provide some innovative solutions.

IWA has an important role as a networking platform for water professionals. Apart from your activities there, you are also a professor at Universitat Politecnica de Valencia (UPV), which brings you in contact with young people entering the field. Would you say that the water sector is attracting enough young professionals?

I am very proud of our online training program at UPV, which is aimed precisely at helping young professionals entering the sector (we also have a fair share of water professionals refreshing their skills and engaging in lifelong learning). From my position I think that the water sector has always been attractive as an option. Probably never the most desirable of options, but it is always there, and it is a very solid alternative for young people. The new generations are more environmentally aware, and I believe working in water is very fulfilling for motivated individuals.

In terms of the number of professionals needed to satisfy the needs of the sector, we need many more, but here again we hope our digital future can help tackle the gap.

Does IWA have, apart from connecting professionals, also the intention of making jobs in the water sector more appealing, therefore attracting more people? If yes, how?

IWA is very much aware of the needs of the sector, with an increasing demand of well-trained water professionals. Our Young Water Professionals and Emerging Water Leaders programs provide young people the opportunity to play a very relevant part in the global transformation that is needed in the water sector. I was lucky enough to be part of the early stages of the YWP program and it has definitely made a huge difference in my career.

Additionally, IWA is now expanding its IWA Learn initiative, aimed at the continuous professional development of water professionals, as it is critical to be able to build capacity and update the knowledge of water professionals around the world. In the coming years I see this as one of the great contributions that IWA can make to the water professionals’ community. Many of the IWA members joined the association so they could keep up-to-date with the latest technical developments in an ever-changing technological world. IWA Learn may become a fantastic vehicle to do that while allowing our young (and not so young) professionals to grow, learn and obtain recognition for their efforts within the association.

Mr. Cabrera, we thank you for this interesting talk.

The interview was conducted by Patricia Santos.